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December 15, 1994

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Ms. Searcy:

On behalf of Cornell University, transmitted herewith are an original and nine (9) copies of its Comments in response to the Notice of Proposed Rulemaking in the matter of "Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use" - ET Docket No. 94-32.

Should any question arise concerning this issue, please communicate with the undersigned at the Arecibo Observatory.

Very truly yours,

Dr. Willem A. Baan
Spectrum Manager, and
Senior Research Associate

cc: Dr. Daniel Altschuler, Director, Arecibo Observatory
Dr. Donald Campbell, Cornell University
Dr. Michael Davis, Arecibo Observatory
Dr. Tomas Gergely, National Science Foundation
Paul Feldman, Esq., Fletcher, Heald, and Hildreth
Michael Kimberly, Esq., Acting University Council, Cornell

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Allocation of Spectrum Below	)	ET Docket No. 94-32
5 GHz Transferred from	)	
Federal Government Use	)	

COMMENTS OF
CORNELL UNIVERSITY AND
THE NATIONAL ASTRONOMY AND IONOSPHERE CENTER

Cornell University ("Cornell") and the National Astronomy and Ionsphere Center ("NAIC"), which operates the Arecibo Observatory ("the Observatory") near Arecibo, Puerto Rico under the terms of a cooperative agreement with the National Science Foundation, hereby submit their comments in response to the Commission's Notice of Proposed Rulemaking, FCC 94-272, released November 8, 1994 on the Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use ("NPRM").

I. Introduction

Cornell and NAIC recognize that the reallocation of portions of government spectrum, persuant to the Omnibus Budget Reconciliation Act of 1993, is aimed at encouraging the development and use of new spectrum-based technologies. Cornell is pleased that the Commission's Notice of Inquiry ("NOI"), released May 4, 1994 recognized Radio Astronomy as a valuable user of the spectrum and emphasized that the quality of the spectral regions allocated to the Radio Astronomy Service ("RAS") should not be degraded or jeopardized by the reallocation process of adjacent bands.

The NOI particularly recognized the importance of the planetary radar operations at the Arecibo Observatory[1] and suggests the placing of restrictions on use of the 2390-2400 MHz band[2]. The NOI reflected the specific recommendations of the

Preliminary Spectrum Reallocation Report (the "Report") issued by the National Telecommunications and Information Administration ("NTIA"). Both Cornell and the Committee on Radio Frequencies ("CORF") have submitted Comments in response to this NOI.

While Cornell is pleased that the body of the NPRM recognizes some of its concerns and those of the radio astronomy community, Cornell is very concerned about the fact that no actual restrictions have been placed in the proposed rules in Appendix F of the NPRM. Certain uses of the two reallocated bands may cause detrimental interference within the Commission's rules to planetary radar studies in the 2370-2390 MHz band. Specific limits on out-of-band emissions and regional restrictions for terrestial services are essential for protecting this band and which will not particularly burden the users of the bands.

II. Users of the 2390-2400 and 2402-2417 MHz Bands Need to Protect the Planetary Research in the 2370-2390 MHz Band

The 2390-2400 MHz and 2402-2417 MHz frequency bands being reallocated are adjacent to the 2370-2390 band used by radar astronomers for their observations at the Observatory. Cornell is concerned that unwanted emissions from users in these bands will interfere with the very weak return signals of the Observatory's radar and effectively destroy the data. The NTIA Report contained specific proposals (at page 4-17) for the 2390-2400 MHz band to prohibit airborne and space-to-Earth links and placing a limitation for terrestial operations only within Puerto Rico. No restrictions were proposed in the Report for the 2402-2417 MHz band.

The discussion section of the NPRM mentions two disconcerting possibilities for the reallocation of the bands: (1) an unrestricted allocation for Fixed and Mobile services not excluding aeronautical mobile or (2) a Mobile Satellite Service allocation. A downlink MSS allocation of the 2390-2400 MHz as discussed in the NPRM[3]

[1]In Comments submitted by Cornell and CORF in response to the NOI in this proceeding, the significance of this band for planetary radar studies has been described extensively. The Arecibo Observatory is the world's largest single dish radio/radar telescope with a collecting surface of 73,000 m^2. With state-of-the-art receiver technology it serves as the most powerful radar in the world for research on a variety of bodies in our Solar System.

[2]NOI at page 4.

would be disastrous for the planetary radar operations at the Observatory and must not be accepted. From experience with Fixed and Mobile service at lower frequencies, Cornell anticipates that general Fixed and Mobile Service and especially aeronautical air-to-ground services allocated to Puerto Rico or the Virgin Islands would again be very damaging for planetary research at the Observatory.

In response, Cornell reiterates its earlier request for protection of the 2370-2390 MHz band for planetary radar research at the Arecibo Observatory. Cornell suggests that the Commission provides protection for this band using the following guidelines: a) establish separation rules limiting land-based operations in both the 2390-2400 and 2402-2417 MHz bands in Puerto Rico, and b) prohibit the use of the bands for airborne or space-to-Earth links.

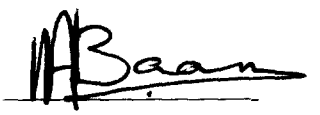
III. Conclusions

The Radio Astronomy Service and other passive services are the most vulnerable of all spectrum users. The Commission has expressed its concern about this vulnerability and is making continual efforts to protect the RAS. The radar research conducted at the Arecibo Observatory is unique in the world and allows imaging of distant planetary objects within our Solar System. At the same time, the weak return signals are very vulnerable with regard to unwanted emissions from adjacent bands and these operations need protection. In this regard, Cornell urges the Commission to establish specific rules for each of the reallocated 2390-2400 and 2402-2417 MHz bands in order to protect planetary radar studies in the 2370-2390 MHz band. Land-based operations in Puerto Rico must be limited and the use of the bands for airborne or space-to-Earth links must be prohibited.

[3]NPRM at page D-4

Respectfully submitted,

CORNELL UNIVERSITY

By: 

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December 16, 1994